

REMARKS

The present response is accompanied by a Request for Continued Examination (RCE). Claims 1-22 are currently pending in the application. Claims 1-22 have been amended. No claims have been added or canceled. Therefore, claims 1-22 will remain pending in the application after entry of the foregoing claim amendments.

Formal drawings were filed with the application on October 24, 2003. Applicants respectfully request that the Examiner indicate acceptance of the drawings.

Applicants gratefully acknowledge the time and attention afforded by Examiner Ortiz during a telephonic interview on January 17, 2008. During the interview, Applicants' representative and Examiner Ortiz discussed the claims, the cited references, and the non-anticipatory and non-obvious nature of the claims in view of the references. Applicants' representative proposed amending the claims to further distinguish the claimed embodiments from the cited references. Examiner Ortiz agreed to reconsider the application in view of the proposed amendments. Accordingly, Applicants have amended the claims as discussed during the interview.

Independent claims 1, 8, 15 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,016,497 ("Suver") in view of U.S. Patent No. 6,564,203 ("Krishnaprasad"). Without conceding the merits of the rejection, Applicants have amended the claims to further clarify the claimed embodiments.

As amended, claim 1 recites, in part, representing modifications to a subset of values in a complex structured column of a database using a data structure. The values in the complex structured column are embedded in a hierarchy, which includes two or more levels within at least one row of the complex structured type column. The subset of values are embedded at arbitrary levels within the hierarchy. Changes to the subset of values at the arbitrary levels are aggregated and then applied to the subset of values in the complex structured type column. Thus, the claimed embodiments enable arbitrary levels within at least one row of a complex structured column to be modified via the same statement (*Specification* at ¶ [0038]).

For example, as shown in FIG. 3 of the present specification (partially reproduced below), the complex structured column labeled “Addresses” may be modified at arbitrary levels that include values for a zip code and an area code (*id.*).

EmployeeID	FirstName	LastName	Salary	Addresses	
1233	John	Smith	50000	30 Jump Street, Seattle, WA, 98000	206-123-45-80
				20 Jump Street, Portland, OR, 97000	206-123-45-81
1234	Tom	Brown	66000	31 Pine Street, Seattle, WA, 98074	207-123-45-87
				32 Pine Street, Seattle, WA, 98074	207-123-45-86
1235	Robert	White	44000	33 Pine Street, Seattle, WA, 98074	207-123-45-88
					206-123-45-89
					206-123-45-90
					206-123-45-81

Changes to arbitrary levels with the complex structured column

As further shown in FIG. 3, changes to the subset of values at arbitrary levels in the complex structured column may be within a single row (*e.g.*, the row for EmployeeID 1235), or may be within two or more rows (*e.g.*, the rows for EmployeeID 1234 and 1235).

Suver, by contrast, does not teach or suggest aggregating and applying changes to a subset of values at arbitrary levels within at least one row of a complex structured column. More specifically, Suver discloses a system for accessing complex data in a relational database (Suver at col. 2, ll. 53-57). As shown in Suver’s FIG. 15, upon receiving an update command from a user, a routine 1500 may be initiated to conduct an update data operation on the database (*id.* at col. 24, ll. 42-44). At step 1504 of the routine 1500, the physical row that is to be updated is found (*id.* at col. 24, ll. 50-52). At step 1508, an embedding column is found if the data values are embedded within a table (*id.* at col. 24, lines 52-56). At step 1512, the data values in the physical row are then updated (*id.* at col. 24, ll. 59-60). In other words, while Suver discloses updating data values within a row of an embedded table generally, Suver does not teach or suggest aggregating and applying changes to a subset of values at arbitrary levels within the row.

As noted in the Background section of the present specification, Krishnaprasad discloses updating complex data using Data Manipulation Language (DML) and trigger code (*Specification* at ¶ [0004]). Krishnaprasad’s trigger code is “designed to fire when a row of a database table . . . is updated, inserted or deleted” and, therefore, updates an entire row of

data at a time (*id.*; *see also* Krishnaprasad at col. 6, ll. 17-18 (“The row to be inserted has values for each field of the nested collection.”)). Thus, Krishnaprasad does not supply the missing teachings of Suver.

Accordingly, Applicants respectfully submit that claim 1 patentably defines over the combination of Suver and Krishnaprasad because neither reference teaches or suggests aggregating and applying changes to a subset of values at arbitrary levels within a row of a complex structured column.

Like claim 1, claim 8, as amended, also recites aggregating and applying changes to a subset of values at arbitrary levels within a row of a complex structured column. As amended, claims 15 and 18 recite aggregating and applying changes to a subset of values at arbitrary levels within a row of a collection-valued column. Thus, Applicants respectfully submit that claims 8, 15 and 18 patentably define over the combination of Suver and Krishnaprasad for at least the same reasons discussed above.

Applicants respectfully request, therefore, withdrawal of the rejection of claims 1, 8, 15 and 18 under 35 U.S.C. § 103(a).

Claims 2-6, 9-13, 16, 17 and 19-21 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Suver in view of Krishnaprasad. Claims 7, 14, and 22 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Suver in view of Krishnaprasad and in further view of U.S. Patent No. 6,122,644 (“Graefe”). As claims 2-7 depend from claim 1, claims 9-14 depend from claim 8, claims 16 and 17 depend from claim 15, and claims 19-22 depend from claim 18, Applicants respectfully submit that the dependent claims likewise patentably define over the cited references.

Applicants respectfully request, therefore, withdrawal of the rejections of the dependent claims under 35 U.S.C. § 103(a).

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37 CFR § 1.116**

CONCLUSION

For at least the foregoing reasons, Applicants respectfully submit that the claims are allowable and that the present application is in condition for allowance. Reconsideration of the application and an early Notice of Allowance are respectfully requested. In the event that the Examiner cannot allow the present application for any reason, the Examiner is encouraged to contact the undersigned attorney, Bryan T. Giles at (215) 564-8954, to discuss the resolution of any remaining issues.

Respectfully submitted,

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